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TECHNIQUES OF MANPOWER ASSESSMENT AND THEIR IMPLICATIONS FOR DEVELOPMENTAL PLANS OF THE UAR

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TECHNIQUES OF MANPOWER ASSESSMENT AND THEIR IMPLICATIONS FOR DEVELOPMENTAL PLANS OF THE UAR

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PART I

Sources of Data and Methodology

1. The assessment of current manpower resources is today one of the main tools for economic development planning. Since the validity of manpower assessment depends upon the reliability and the accuracy of the available statistics, an enumeration of the major sources and a brief indication of their relative usefulness for this purpose is given here.

Major sources of Data:

2. Population censuses - The changes in definitions, the expense, the effort and the time required for the undertaking of these, as well as the often incomplete information are factors which limit the usefulness of this source. Its chief limitation for our purpose however is the inadequacy of its supply of occupational and industrial information.

3. Statistics related to Industrial and Commercial Establishments - These have the advantage of providing adequate data on occupation and industry by geographical location, the number of workers on payrolls, the hours worked during specific periods, etc. The disadvantages of this source are slight and may be counted as due to: a) the influence of atypical establishments, b) difficulty of computation of standard error, c) double counting of those working in more than one establishment, d) the same weight being given to part-time workers as to full-timers, e) limitation of coverage.

4. Data gathered from Employment Service Offices - Data on job-applicants, available openings, referrals, placements,

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and labour market information are all readily available from this source. Of course the scope of such data depends on the number of such offices and the statistics unfortunately show data of un-employment in greater detail than they do for employment.

5. Compulsory social insurance data - This is of considerable reliability though legislative and administrative regulations affect the data. In the case of statistics related to Relief, they are especially influenced by the coverage factor.

6. Trade union and union benefit fund statistics - Because affected by the degree of development of the individual union and by conditions governing membership in the unions, these are not considered reliable sources of information.

7. Indices of employment measurement - The number of persons employed in the major divisions of economic activity, or indices related to total hours worked (manhours, wage measurements, etc.) are used as measures for the volume of employment.

8. Manpower sample surveys - Data obtained from these afford information on the two major sections of the Labour force, employed and unemployed. They also offer the further advantages of flexibility, inexpensiveness, less effort and time than required for census, while they give an overall picture of the population, with no double counting, yet allowing for cross classification of economic activity and personal and family characteristics.

9. Available data in the UAR - In the UAR all the above sources are tapped in varying degrees with a heavy dependence on the manpower sample survey adopted since 1957. Since the revolution ten years ago, real effort has been made to modernise and organise statistical procedures and data processing in order to keep pace with the changes in the economic structure. A Central Statistical Committee has been established to supervise and help prepare comprehensive up-to-date figures. The National Planning Committee of the Presidency of the Republic was also set up for the purpose, amongst others, of developing planning techniques. Those of manpower assessment were given high priority in importance. The Ministry of Labour plays a large part in the protection and maintenance of manpower (employment service offices, manpower surveys, the gathering of information on labour market trends, syndicates, disputes, technical research, etc.) Naturally the Census Bureau remains responsible for census data and other periodic surveys such as Establishment surveys, Production surveys, and other by-products of demographic and vital statistics. The National Organization for Insurance publishes periodic reports in its own field which form valuable additional sources of data for manpower assessment.

10. Among other steps taken to ensure increased reliability and accuracy of Statistical data are:

(a) The introduction and wider use of modern machinery for the processing of Data.

(b) The increase of coverage and periodicity of certain surveys.

(c) The continuous training of investigators and persons employed in the processing and analysis of data.

(d) The establishment in greater number of Employment Service Offices throughout the country.

(e) The institution of an Unemployment Insurance system.

(f) The undertaking of new surveys.

PART II

Manpower Sample Survey (by Households)

11. Definitions: Of the terms in use here are those given in the International Standardization of Labour Statistics of I L O. One exception, however, should be noted: the term household is defined to exclude all institutional population and the armed forces.

12. The Survey: Takes into consideration the following variables:

(a) Geographic distribution of the labour force by sex, age, marital status, education, employment, occupation and industry.

(b) Level of wages (this variable has been added since the 14th, round).

(c) Measurement of seasonal changes in the above variables.

(d) Measurement of the extent of employment and unemployment.

13. Techniques and periodicity of the rounds: The interview method has been adopted. Two hundred and fifty trained investigators filled in the schedules while interviewing the head of each of the 21,000 households of the sample in each of the first four rounds. Gradually and according to modifications introduced into the schedule the investigators were increased to 1200 and the Households to 60,000. The field work of each 4 to 5 investigators is checked by a supervisor. For each province a controller and two assistants are responsible for the organisational and technical problems of the operation within their area. An executive board appointed for the planning, supervision and execution of the survey, controls the overall operation.

14. Sampling design: The Country is divided into nine zones. This stratification brings into the investigation a number of beterogenous groups of the population, each group homogenous internally as far as available information shows. The sample was drawn from a frame derived from the preliminary information recorded by the enumerators at the preparatory stage of the 1957 census.

15. It was assumed that the variation in occupation and industry records its maximum value in both Cairo and Alexandria, while decreasing in the rest of the urban areas to reach its minimum value in the countryside, the sample fractions for each of these categories was consequently different. In the first

two strata (Cairo and Alexandria) a two-stage sampling design was adopted. From each one of the districts (Quism) half the blocks (Shiakha) were selected at random. A number of households proportional to the total number of households in the Shiakha, and equal to 1% of the households within the Quism, was selected systematically from each selected Shiakha. In the third stratum a similar procedure was adopted with the slight difference that only 0.5% of the households were selected. For each of the cities and towns with a population of 5,000 households and over (4th and 7th strata) the same sampling fraction was fixed. For small towns with a population of less than 5,000 households (strata 5 and 8) 0.25% of the households were selected from each province.

16. For the sake of convenience and simplification of the field-work, a three-stage sampling system was adopted for the two zones comprising the rural part of Egypt, i.e. the 6th and 9th strata: first, 1/4 of the districts (Markaz) in each province (Moudiria) were selected at random, then 1/10 of the villages belonging to each selected Markaz were chosen at random. A sample of households was systematically selected from each selected village according to size of the village, bringing the ultimate sampling fraction to 0.25%.

17. Modification introduced in the sampling design: The sampling design was revised in the light of the experience gained and the results obtained after the compilation of the fourth round. For the fifth round the sample design adopted was as follows:

(a) The Country was divided into five strata:

(i) Cairo, (ii) Alexandria, Canal and Suez

(iii) Capitals of provinces and large towns in Lower and Upper Egypt, (iv) Capitals of districts in Lower and Upper Egypt. (v) Villages in Lower and Upper Egypt.

(b) A random sample of 1% of households was selected from the Shiakhas constituting each of the first two strata. A sample of 0.5% was similarly selected from the third stratum.

(c) For the fourth stratum half the towns were directly selected at random. Then 1% of the households was selected from each chosen town thus bringing the sampling fraction to 0.5%.

(d) For the fifth stratum, villages were classified in two types:

(i) Large villages with a population of 2,500 households and over.

(ii) Other villages. One-sixth of the villages of type (i) were selected at random. A sample of household was chosen from each selected village bringing the ultimate sampling fraction to 0.5%. From villages of type (ii) only 5% of the villages of each province were selected at random. A sample of 4% of the households of each selected village was chosen to bring the sampling fraction for this substratum to 0.2%. This substratification leads to more homogeneity within the population groups investigated.

(e) The main characteristics of the population belonging to the villages of type (i) were tested beforehand in order to assess their deviation from both the rest of the rural population and that of small-town communities. The test was intended to indicate the relevant stratum to which big villages belong. However, no definite conclusions could be drawn.

18. Rotation of sample: Starting from the seventh round, a rotating sample design was adopted. Two independent samples of households were selected according to the design used in the fifth round. Each of the two samples was divided into three systematic subsamples thus giving a total of six rotating groups. Three of these sub samples were selected at random and the households in them were interviewed for the seventh round of the survey. From the eighth round one rotation group selected at random, leaves the sample for three consecutive rounds and is replaced by another group. In this way one-third of the usual sample is common in three consecutive rounds, and two-thirds in two consecutive rounds. This system of rotation provides continuity in the series of data and facilitates the measurement of changes in the characteristics studied. It helps to reduce sampling errors.

19. Sampling design for the sequence of rounds beginning April 1961: Here the design was changed again in order to obtain the required estimates for each governorate separately:

(a) Urban governorates (governorates without villages)

(i) The sampling fraction was fixed at 1% for Cairo and Alexandria, and 3% for Suez, Ismailia and Port Said, not exceeding 1400 households in each of the last three governorates.

(ii) One-stage sampling selection was adopted and districts were represented by all their subdistricts.

(iii) The sampling size was distributed among all the subdistricts in proportion to size.

(iv) The number of households chosen from each subdistrict was selected systematically.

(b) Rural governorates (governorates with villages) Each governorate was divided into two strata as follows:

(i) Rural area containing all the villages of the governorate. The sampling size was fixed at 1400 households selected as follows:

(a) The sampling size was distributed among all the markazes in proportion to their size.

(b) In each Markaz 10% of the villages was selected at random. The minimum number of these was fixed at two villages.

(c) The number of households in each Markaz (determined by the first step) was distributed among the selected villages in proportion to their size.

(d) The required number to be chosen from each was selected systematically.

(ii) Urban area containing the capital of the governorate and the capitals of the Markaz's. The sampling size was fixed at 1400 households selected as follows:

(a) The sampling size was distributed among the capitals of the governorate and the capitals of the Markaz's in proportion to their size.

(b) The required number of households chosen from each capital was selected systematically and in a single stage.

PART III

FUTURE SUPPLY

Forecasting the future supply of labour:

20. A knowledge of the expected future supply of labour was needed for drawing up the Socio-Economic Development Plan of 1960-1964. This necessitated the projection of population estimates, total and by sex and age. It was achieved in three steps:

(a) Percentage of labour force to toal population.

(b) Consideration of expected expansion in education.

(c) The increase of females in the labour force.

21. For the projection of the total population, the natural increase occurring in 1953 (last official data available) was assumed to continue. For the age - sex distribution, the actual percentage distribution deduced from data arrived at in the manpower sample surveys undertaken as stated above was applied to the total population projected as described, thus assuming stability of the structure over the period. This assumption was rationalised on two bases:

(a) Stability of the age-sex structure of the UAR population over the past 30 years.

(b) Shortness of the period under study.

22. In order to make allowances for the expected expansion in educational facilities an attempt was made to classify the increase in the labour force according to educational qualifications. Two types of educational stages were distinguished:

(a) Final Stages - (those stages at which a training is considered final) include universities, high institutes, technical institutes and vocational training centers. Graduates of these institutions, males and females during the five year period under study were assumed to be going into the labour market (deaths excluded).

(b) Continuing Stages - (those stages from which it is assumed the student proceeds to a higher stage of education) include all the stages of the public

educational system. All males and a percentage of females (estimated at 10% of the males) leaving school at whatsoever stage of their general education were considered as going into the labour market (estimated deaths are also excluded).

23. The difference between the estimates of the total increase in the labour supply over the five year period studied and the number of young people going into the labour force during that period (the sum of (a) and (b) above) represents the number of people joining the labour force without going through any vocational training institution. The annual increase of females in the labour force was found to be 8% of the total females in the UAR. The difference between this percentage and the 2.5% natural increase for the total population multiplied by the number of females in the labour force in the base year represents the annual addition by which estimates arrived at in step two had to be adjusted.

PART IV

Forecasting of Future Demand

24. A number of methods and techniques were proposed in order to obtain the required estimates but none gave a perfect or completely reliable answer. The first suggestion offered was to depend on employers own estimates of the force they would need during the period under study. Two main difficulties however came up:

(a) Employers estimates in many cases, especially in those industries or technologies new to the country, were mere guesses.

(b) Estimates of labour turnover in existing establishments, especially small ones, were to a great extent, unreliable. Capital to labour ratio was thought of, but difficulty in defining and measuring the type of capital most appropriate made it impractical to depend directly on such a ratio. Size and nature of planned investment was considered, but this was done indirectly through their effect on volume, and structure of production. Changes in the latter were the basis of two main attempts actually undertaken. The ratio of gross production out-put to labour was assessed by economic sectors for the base year. Alternative rates of annual increases ranging from 1% to 5% in labour productivity (measured by the above mentioned ratio) in all sectors were assumed. When total demand under any of these alternatives exceeded forecasted total supply, demands of all sectors other than agriculture were assumed to be fully satisfied first, and the remainder was to be left to agriculture which is known to be already overstaffed.

25. Unification of annual rates of increase in all sectors was criticized as well as the interpretation of over-staffing in agriculture. So another attempt had to be undertaken. Gross value added was then considered a better manifestation of labour productivity than gross production. Gross value added per worker was assessed for each branch (not sector)

of activity in the base year. On the basis of post development and intended levels of productivity and taking into consideration the type of technology that is expected to prevail, annual ratio of increase was set for each branch of activity separately.

26. Manpower requirements assessed in this way were submitted to one more adjustment and to a number of checks. The adjustment took into consideration the indirect effects of investment in one branch upon employment levels in other branches wherever such effects had not been accounted for through changes in the volume of production and value added. The main check was achieved by comparing branch by branch, the total annual wages that would result from forecasted number of employees and expected average annual wages with estimated value added.

27. Estimates of changes in the average annual wages took account of:

(a) Changes in the occupational distribution which were expected to reflect two main trends having opposing effects upon average wages:

(i) Increasing dependence upon skilled and highly trained professionals, technicians and workers receiving above average wages and salaries.

(ii) Increase in employment would naturally occur at the bottom where wages and salaries are usually below the average.

(b) The generally observed secular trend of rising average wages.

(c) The socialist objective calling for the raising of workers share in the returns of economic activities and the raising of their minimum wage rates.

Methods mentioned earlier but considered to be of limited reliability were used as a check on estimates arrived at during this second attempt.

28. The total future needs thus forecasted were broken down by occupations. The first approximation to such a breakdown was the projection of the present pattern of occupational distribution deduced from the first four rounds of the manpower sample survey. Later refinements guided but not limited or restricted by occupational structures in similar industries in coutries at the stage of development towards which we tend, and by a knowledge of the technologies expected to prevail in each branch of activity took account of the absorption capacities of various industrial and agricultural development projects for various levels of skills and proficiencies based on chosen coefficients of manpower requirements.

PART V

A FORWARD LOOK

29. Reliable determination of occupational distribution is delayed due to insufficiency of data and to a lack of uniformity in definitions in use. In an effort to overcome these obstacles the Central Statistical Committee has issued a maunal on job -

classification based upon similar international classifications yet adapted to the circumstances particular to the UAR. Generalisation of the use of this manual is one of the committee's aims and a number of steps have been taken towards its realization. Job definition up to the level of the third digit has been completed.

30. It is planned to assess future needs for various skills and technical specializations, in the various economic activities, upon the basis of well defined job - description. This will enable the formulation of:

(a) Realistic long-term educational training programmes to meet the demand for task forces necessary to each industry.

(b) Proper allocation of human resources enabling maximum utilisation and minimum waste of these valuable assets.

31. The burden of achieving this falls heavily upon two organisations other than the Central Statistical Committee, namely, the Ministry of Labour and the Permanent Committee on Technicians and Working Personnel. The later is undertaking at present a comprehensive survey to assess in classified form the future needs of technicians and skilled workers.

32. The establishment of the Ministry of Labour is in itself a manifestation of the augmenting interest in manpower and labour affairs. Its interest is not confined to assessment of future demands of labour; it is also interested - within the field we are discussing - in supply, and means of balancing the two, and other related subjects. The establishment of a national institute of labour has been suggested by this ministry. It is hoped that problems which hinder more reliable assessment of manpower needs and resources, especially those connected with productivity measurement, determination of various technical coefficients, disguised unemployment, geographical distribution of labour supply and demand, as well as those of international comparisons will be adequately solved with the establishment of the proposed institute.

33. The Mobilisation Office of the Ministry of War, the Ministries of Education, Industry, and National Planning are all attempting within their means, to improve the estimates of future supply and demand of labour. The shortcomings of data and methods in use in manpower assessment are recognised and genuine efforts are being made by all concerned to overcome existing inadequacies.

390 E - Oct. 1962 - 1, 60